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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/510,688

06/07/2005

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Q84004

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23373 7590 03/17/2009
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EXAMINER

SALZMAN, KOURTNEY R

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/510,688	Applicant(s) DOBSON ET AL.	
	Examiner KOURTNEY R. SALZMAN	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 30-58 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 30-58 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>October 8, 2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Summary

1. This is the first action on the merits for application 10/510,688 filed June 7, 2005. This is a 371 national stage application of PCT/GB03/01383, which claims priority to UK document 0208095.0.
2. Claims 30-58 are currently pending and have been fully considered.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Great Britain on April 9, 2002. It is noted, however, that applicant has not filed a certified copy of the 0208095.0 application as required by 35 U.S.C. 119(b).

Information Disclosure Statement

4. The information disclosure statement filed October 8, 2004 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each cited foreign patent document; each non-patent literature publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered.
 - a. The examiner could not consider the Non-patent literature documents or Foreign Patent Documents supplied in the IDS as no copy was provided of those documents as required. The US Patent Document has been considered.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 30-32, 36-39, 41, 43, 44, 49-51, 57 and 58 are rejected under 35 U.S.C. 102(b) as being anticipated by WILLIAMS et al (WO 95/04271).

Regarding claim 30, WILLIAMS et al teaches a sensor system for detection of an analyte in an aqueous solution (abstract) comprising:

- i. Sample receiving area (18 of figure 1)
- ii. At least three electrodes (12, 40 and 42 of figure 5). Reference number 12 is made of platinum, gold or silver, as stated on page 11, lines 24-28. Reference number 40 is made of platinum or gold and reference number 42 is made of silver on page 14, lines 17-31.
- iii. Insulating substrate is reference number 10.
- iv. A power source is a potentiostat, as described on page 21, lines 19-22, adapted to apply a potential different between working and counter electrodes (12 and 40) with a characteristic potential.
- v. Output means, shown as reference numbers 38 and 80, as described on page 14, lines 8-11.

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- vi. A pH buffering agent is provided to control the solution pH and a reference reagent is added to sufficiently concentrate the chlorine (p. 24, lines 17-22).

Regarding claim 31, as identified in the rejection of claim 30, the use of silver electrodes is described the above cited paragraphs, and specifically page 14, lines 23-25 where a reference electrode with silver chloride is described. The reference reagent is stated on page 24, lines 18-22 to be sodium chloride.

Regarding claim 32, WILLIAMS et al identifies the change and buffering of the pH to increase conductivity on page 20, lines 8-12.

Regarding claim 36, WILLIAMS et al describes the application of the reagents in a paste which dissolves rapidly on page 20, lines 8-28.

Regarding claim 37, the reagent paste is allowed to dry, as stated on page 20, lines 22-23.

Regarding claim 38, the matting layer is the paste described on page 20, lines 8-28.

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Regarding claim 39, WILLIAMS et al teaches the application of voltage occurs from a potentiostat on page 21, lines 19-22.

Regarding claim 41, WILLIAMS et al teaches the entire apparatus to be portable for use in the field in claim 13.

Regarding claim 43, WILLIAMS et al states the substrate to be made of plastics, more specifically alumina, known to have hydrophobic properties on page 11, lines 17-20.

Regarding claim 44, all three electrodes are shown in figure 5 to be on the same substrate 10.

Regarding claim 49, WILLIAMS et al states on page 14, lines 21-29 that if the measured current, or solution conductivity of the instant application, is small the addition of the reagents is then possible. Therefore, the reading of the conductivity occurs in addition to the information for calculating the concentration of the species.

Regarding claim 50, WILLIAMS et al teaches a sensor system for detection of an analyte in an aqueous solution (abstract) comprising:

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- b. The application of a sample to the sensor element on page 21, lines 19-20 comprising:
 - vii. Sample receiving area (18 of figure 1)
 - viii. At least three electrodes (12, 40 and 42 of figure 5). Reference number 12 is made of platinum, gold or silver, as stated on page 11, lines 24-28. Reference number 40 is made of platinum or gold and reference number 42 is made of silver on page 14, lines 17-31.
 - ix. Insulating substrate is reference number 10.
- c. Combining the test solution of pH buffering agent is provided to control the solution pH and a reference reagent is added to sufficiently concentrate the chlorine (p. 24, lines 17-22).
- d. Connection to a power source is a potentiostat, as described on page 21, lines 19-22, adapted to apply a potential different between working and counter electrodes (12 and 40) with a characteristic potential.
- e. Output means, shown as reference numbers 38 and 80, as described on page 14, lines 8-11. The application of the power is started following the introduction of the solution as stated in column 21, lines 19-22, therefore, once the power is applied output begins, encompassing quasi-steady state (before vibration) and during steady state.

Regarding claim 51, as identified in the rejection of claim 50, the use of silver electrodes is described the above cited paragraphs, and specifically page 14,

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lines 23-25 where a reference electrode with silver chloride is described. The reference reagent is stated on page 24, lines 18-22 to be sodium chloride.

Regarding claims 57 and 58, WILLIAMS et al teaches the reagents to be encapsulated in a soluble film, allowing for the reagents to be dispersed into the sample upon dissolution and contact on page 20, lines 8-25.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

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under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 33-35, 40, 42 and 52-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over WILLIAMS et al (WO 95/04271).

Regarding claims 33 and 34, the measurement of ammonium in water is taught starting on page 23, line 25. The use of sodium chloride is stated to be used on page 24, lines 17-22. Page 21, lines 3-7 identifies a phosphate buffer solution as the chosen buffer, but the use of trisodium phosphate would be an obvious alternative as the selection of the buffer is to choose a pH to match the chemical reaction.

Regarding claim 35, since the measurement of chlorine, ammonium and heavy metals in water is taught in WILLIAMS et al, it would have been obvious to utilize the apparatus for the testing of nitrogen ions. The use of sodium chloride is stated to be used on page 24, lines 17-22. Page 21, lines 3-7 identifies a phosphate buffer solution as the chosen buffer, but the use of a pH around 6.8 would be an obvious alternative as the selection of the buffer is to choose a pH to match the chemical reaction.

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Regarding claim 40, the application of a differential pulsed square wave voltammetric circuit would have been obvious to one of ordinary skill in the art as this is a well known method of voltage application in electrochemical cells.

Regarding claim 42, it would have been obvious to one of ordinary skill in the art to couple a display to the signal processing means in order to output the currents and concentrations read and generated by the sensor itself as a means of outputting the results because without the display there is no way to obtain information from the sensor.

Regarding claim 52, WILLIAMS et al teaches on page 24, lines 19-22, that enough sodium chloride is used to create a solution with sufficient chlorine concentration for high efficiency. It would have been obvious to add any amount of sodium chloride which makes the solution detectable.

Regarding claims 53 and 54, the measurement of ammonium in water is taught starting on page 23, line 25. The use of sodium chloride is stated to be used on page 24, lines 17-22. Page 21, lines 3-7 identifies a phosphate buffer solution as the chosen buffer, but the use of trisodium phosphate would be an obvious alternative as the selection of the buffer is to choose a pH to match the chemical reaction.

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Regarding claim 55, since the measurement of chlorine, ammonium and heavy metals in water is taught in WILLIAMS et al, it would have been obvious to utilize the apparatus for the testing of nitrogen ions. The use of sodium chloride is stated to be used on page 24, lines 17-22. Page 21, lines 3-7 identifies a phosphate buffer solution as the chosen buffer, but the use of a pH around 6.8 would be an obvious alternative as the selection of the buffer is to choose a pH to match the chemical reaction.

Regarding claim 56, it would have been obvious to one of ordinary skill in the art to couple a display to the signal processing means in order to output the currents and concentrations read and generated by the sensor itself as a means of outputting the results because without the display there is no way to obtain information from the sensor.

11. Claims 45-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over WILLIAMS et al (WO 95/04271), in view of BOHS et al (US 5,399,256).

WILLIAMS et al teaches all the limitations of claim 30. WILLIAMS et al fails to explicitly show circular concentric electrodes and a temperature sensing system.

Regarding claims 45-47, BOHS et al teaches an electrochemical detection cell in figures 7-12 with concentric electrode orientations. Regarding claim 46, figure 11 shows a central or first electrode 242, with second and third electrodes concentrically organized, reference numbers 244 and 246. Regarding claim 47,

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figure 17 shows an electrode with pieces insulated from each other while the concentric shaping of the outer electrodes is shown in figure 11.

At the time of the invention, it would have been obvious for one of ordinary skill in the art to organize the electrodes of WILLIAMS et al in the orientations of BOHS et al because they are shown to be arrangements known in the art which provide the same functionality.

Regarding claim 48, BOHS et al teaches the control of temperature of the sample in column 9, lines 23-32.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to supply the temperature detection means of BOHS et al to the electrochemical cell of WILLIAMS et al because BOHS et al states in column 9, lines 27-30, temperature control ensures optimal results and experimental precision from test to test.

Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KOURTNEY R. SALZMAN whose telephone number is (571)270-5117. The examiner can normally be reached on Monday to Thursday 6:30AM-5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kaj K Olsen/
Primary Examiner, Art Unit 1795

krs
3/13/2009